

XVII.—On the *Helicidæ* collected during the Expedition into the Dasta Hills, Assam.—By Major H. H. GODWIN-AUSTEN, F. R. G. S., F. Z. S.; &c., Deputy Superintendent Topographical Survey of India.

This list contains nearly all the species of *Helicidæ* that were obtained during the Expedition of 1874—75.

There are still a few that have not yet been determined: they will be worked out and those of them that prove to be new described by Mr. G. Nevill, from the series presented by me to the Indian Museum.

I was in hopes that Mr. Nevill would have been able to join me in completing the list; but his many other duties and late unavoidable absence from Calcutta have prevented this, and as the plate must appear now, I am compelled to give it thus incomplete.

HELIX LUBRICA, Bs. ? Plate VIII, Fig. 9.

Until I had examined the animal I should have supposed it to possess the usual truncate glandular form at the extremity of the foot. It shews how carefully we should examine the living animals before grouping these very similar forms of *Helicidæ*, and how much has to be done in this direction. I give a description and drawing of this species.

Animal—fore part of foot and head, as well as the tentacles, dark slate, extremity of foot pointed (no gland visible), pale grey, edged light fleshy, sole of foot dark orange, mantle very slightly reflected in front, with no tongue-shaped process,—it is, in fact, very similar to that of *Vitrina*.

Length, 2.0", tentacles 0.5". Shell-major diam. 0.95".

HAB.—Shengorh Peak, 7000 ft.

HELIX (NANINA) BILINEATA, n. sp., Plate VIII, Fig. 8.

Shell globose, very thin, transparent, greenish yellow. Whorls 5, spire conoid. The living shell appears mottled on the upper surface with black and white from the body of the animal shining through its thin and transparent walls.

Animal—the foot pale ochraceous; tentacles black, the black extending on to the neck as two very conspicuous well-defined parallel lines; the upper part of the foot has also two parallel black lines. From the right anterior margin a long tongue-like process is given off, which reaches, when fully extended, up to the apex of the shell, as in the large form, *Nanina decussata*.

HAB.—Tanir Lampa ridge, 4000 ft. Very abundant in the forest among the fallen leaves.

HELIX (NANINA) GLOBOSA, n. sp.

Shell very globose, thin and glassy, pale ochre, whorls 4, the last large and expanded below. Aperture broadly lunate. Apex rounded.

Alt. 0·28", major diam. 0·40".

Animal, dark grey, becoming pale fleshy on extremity of foot, which is broad behind, with the lobe over the gland much hooked. Tentacles rather thick at base. Length 1·2", tentacles 0·2".

HAB.—Summit of Toruputu Peak.

This shell is of the form of *H. salius*, but is much larger; and the animal differs considerably.

Helix (Rotula) vidua, W. Blf.

Both at Shengorh 7000 ft. and at the base of the hills at the Burroi gorge, and in the woods skirting the Pichola nulla, far out into the plains, a small globose form was found everywhere very abundant.

Alt. 0·28", major diam. 0·50".

Helix (Rotula) climacterica, Bs. Torúpútú Peak.

Helix remicola, Bs. Burroi Gorge.

Helix (Trochomorpha) acris, Bs. At low elevations.

Helix (Plectopylis) macromphalus, Bs. On Shengorh the form is very small, very dark coloured, and with a tendency to be hirsute. It does not differ in other respects, and was found generally distributed.

Helix (Nanina) oxytes, Bs. Of the usual typical form. General up to 7000 ft.

Helix (Trachea) cestus, Bs. Pichola nulla, in plains of Durrang.

Helix (Macrochlamys) honesta, Gould. Toruputu Peak.

Helix (Trochomorpha) diplodon, Bs. Outer hills, at low elevations.

Helix (Trochomorpha) castra, Bs. Burroi Gorge and banks of upper Dikrang River.

Helix (Plectopylis) plectostoma, Bs. Pichola nulla and Burroi Gorge,—common.

Helix Huttoni, var. *tapeina*, Bs. Burroi Gorge.

Helix (Nanina) bascauda, Bs. About 3000 ft. in Dikrang valley,—not common.

HELICARION OVATUS, H. Blf.

This species, originally described from Darjiling, I was glad to find in this new locality so as to be able to add a description of the animal. It was tolerably abundant.

Animal dark slate colour on head, extremity of foot pale, with a rosy tint in middle of body. Length 1·1", tentacles (rather short) 0·20".

HAB.—Found on Shengorh peak, at 6000 feet.

HELICARION (HOPLITES) VERRUCOSUS, n. sp., Plate VIII, Fig. 5.

The shell with animal was placed in spirit, but has been unfortunately lost: it was thin and glassy, with about 4 whorls. I, however, made a careful drawing of the animal at the time it was taken, and described it thus:—

Animal dull purplish grey; mantle lobes, which can cover the entire shell, are very minutely mottled, and have a finely papillate surface. On the posterior margin are six blunt and larger wart-like processes, arranged 3 on the right and 3 on the left side. Posterior part of the foot well ribbed diagonally, in parallel lines; there is a distinct marginal line to the edge of the foot. The mucous gland is larger and the upper lobe well pointed. Tentacles moderate. The mantle is divided into three lobes, one of rectangular outline is on the anterior left margin. The shell when the animal is in motion is very slightly exposed.

Total length 1.25", mantle 0.60", mantle to extremity of foot 0.50", tentacles 0.20".

HAB.—Under Torúpútú Peak, at 4,600 feet. Found on decaying wood during damp weather.

Among some very excellent drawings of the late Dr. Ferd. Stoliczka is one of a *Helicarion* very similar to this in form and in the papillate surface of the mantle, only that the papillæ are more generally distributed, and the animal is of a dull brown colour.

HELICARION MINUTUS, n. sp., Plate VIII, Fig. 1.

Shell ovate, depressed, rather solid, brown with an olive tinge, and with a glazed polished surface. Whorls 3, very rapidly enlarging. Aperture oblique, elongately lunular.

Major diam. 0.22", minor diam. 0.18".

Animal pale horny, tentacles and a line from them to the mantle dark coloured, with a dark line down the upper surface of the extremity of the foot, which last is mottled on the side. The mantle just covers the edge of the shell and the right posterior lobe is moderately developed. The portion of the body anterior to the shell is very short in comparison to the posterior part.

It may be known from *H. salius* by its much flatter form.

The animal of *H. salius* from a living specimen taken at Mairang in the Khasi Hills is as follows:—

Pale yellowish, with a tinge of orange on foot; tentacles pale, short, a dusky line on upper surface of the posterior portion of foot. Mantle slightly reflected over the edge of the shell. Jumps about actively when handled. Shell (pale green) 0.30". Length of animal 0.6".

I have a form exactly similar from the west Khasi Hills, but none of the shells are so rich in their coloration.

HELICARION (HOPLITES) RADHA, n. sp., Plate VIII, Fig. 4.

Shell similar to that of *H. Shillongensis*. Animal rich ochre, sparsely dappled with grey-black on the mantle and tail.

Length 3·0", head to mantle 0·50", mantle 1·3", mantle to end of foot 1·0", tentacles 0·38".

HAB.—Banks of Rádha Pokri (tank) near Narainpur, Darrang District,—only one specimen was found. This is a close ally of *H. brunnea* and *H. Shillongensis* of the Khasi Hills, but differs in coloration and in the markings of the mantle.

HELICARION (HOPLITES) CINEREUS, n. sp., Plate VIII, Fig. 2.

The shell was not described when taken and it has since been mislaid. The description of the animal, which is of more importance, I can give.

Animal, when fully extended, long and narrow, colour dusky grey, mantle with a papillated surface slightly spotted, the spotting being coarser on the body and tail. Tentacles short and blunt, with the oral ones very close below them.

Length 0·75", mantle 0·40".

HAB.—On the Darpang river, foot of the Daffa Hills, under old logs in the forest.

HELICARION (HOPLITES) BURTII, n. sp., Plate VIII, Fig. 6.

Shell dull white, very horny in texture, the apex scarcely developed, outline rounded above.

Major diam. 0·30".

Animal grey-brown in colour, the largest measuring as follows:—

Mantle to head 0·40"; mantle 0·80", mantle to extremity of foot 0·50", or total length when moving about 1·5".

HAB.—The Borelli Tea Garden near Tezpur, Assam, discovered by Mr. J. Burt, after whom I name it, and who found it abundant on the bark of trees during the rains (July). It is of the true typical form of *Hoplites*, but in its very rudimentary white, horny shell it is quite distinct from any of the other species I am acquainted with.

These molluscs are abundant during the rainy season in this part of India, but are hard to discover in the cold weather, and only then under stones and logs in damp low situations. In July I found *H. croceus* very plentiful just above Teria Ghat, and I observed them, when I was hunting for butterflies, crawling about over the tall grasses 12 feet from the ground.

TESTACELLA ? DIKRANGENSIS, n. sp., Plate VIII, Fig. 7.

Shell dextral, ovate, very flat, solid, the lines of growth well marked, with a dark brown epidermis, the apex cap-shaped, rather produced, and much curved.

Major diameter 0·50", minor diam. 0·25".

Animal not seen.

Two dead shells were found in a damp low piece of forest near the Dikrang river close under the village of Pachitah, or Camp 7.

The shell is a peculiar form, the body whorl spreading out and overlapping in front, giving the shell a limpet-like shape. Without a knowledge of the animal it is very difficult to say in what genus it should be placed, but it is probably a *Helicarion* form. The shell, however, so much resembles *Testacella* that I have placed it temporarily in that group.

PHILOMYCUS (INCILLARIA) CAMPESTRIS, n. sp., Plate VIII, Fig. 3.

No shell.

Animal pale ochre, with a longitudinal dark stripe on the side of body. Tentacles very short, only 0·13". Total length 1·65".

HAB.—Found on the damp grass early in morning at Kholabari in the Darrang District,—only one specimen seen.

I must here allude to a similar form of slug which I have recorded in my note-book as *Philomycus monticolus*, and which I sketched at the time it was taken in the hills bordering the Kopili river, North Cachar Hills. Animal white, tinged with pale lilac, having intensely black spots scattered over body, with one longitudinal band of same colour along the side, and one central down middle of back; foot white below; tentacles very short, brown, the two lower ones wide apart and very short indeed. Extremity of foot pointed. Total length one inch.

OPEAS NEVILLI, n. sp., Plate VIII, Fig. 12.

Shell turreted, very elongate, pale, silky with a green tinge, older specimens of a pale straw-colour, covered with a thin epidermis, beautifully striate under lens. Whorls 11—12, moderately rounded and very gradually diminishing in size to the apex, which is blunt; suture impressed; aperture angular above, outer lip thin.

Alt. 0·55", major diam. 0·10". Largest specimens, 0·90".

HAB. This very delicate elongate shell was common on Toruputu Peak, but far finer specimens, equal in size to the figure, were obtained on the banks of the Pichola Nulla out in the plains. I am not satisfied with this figure; the whorls being rather too flat and the apex too sharp.

I have named this shell after my friend Mr. G. Nevill, with whom I have now so long been associated in the study and collection of Indian land-shells.

Achatina (Glessula) hebes.

Glessula crassilabris, Bs. Shengorh and Torúpútú.

Glessula illustris, G.-Austen. Torúpútú Peak. Found at the same altitude as the original typical form from the Nágá Hills. In forest.

Glessula orthoceras, G.-Austen. Splendid specimens of this shell were obtained at Harmutti and in the Burroi Gorge, where it was very common. The largest measure as much as 2·85 in length by 0·5" in major diameter.

Glessula Cassiaca, Bs. Torúpútú.

GLESSULA DAFLAENSIS, n. sp., Plate VIII, Fig. 10.

Shell elongately turreted, thick, obliquely striate, covered with a thick olive-green epidermis with a few dark streaks. Spire turreted, slightly convex in outline, apex blunt; whorls 11, rather flat, specimens with apex preserved shewing erosion of the surface. Suture well marked. Aperture oblique, suboval, pale grey. Peristome acute, columellar margin slightly curved and but little thickened.

Alt. 1·9", major diam. 0·41", alt. ap. 0·42".

HAB.—Shengorh Peak, rather abundant. This shell would appear to have a close connection with *G. erosa*, H. Blf., from Darjiling, but its much longer form, greater number of whorls, and the different colour of its epidermis (which is uniform throughout), at once distinguish it. As in *G. erosa* the position of former apertures is distinctly indicated on the whorls.

BULIMUS MASONI, n. sp.

Shell sinistral, acuminate oblong, thick, side of spire rather flat, whorls 7, smooth and shiny, under lens finely and spirally striate, colour sea-green, intenser below the keel, paling towards the apex, the columella dark purple, a narrow fillet of same colour borders the suture closely below, commencing at the upper and outer angle of the aperture. Aperture oval, angular above, lip slightly reflected. The last whorl slightly keeled.

Alt. 1·2", major diam. 0·5".

HAB. Dihiri Parbat, 2000 feet. Only two specimens were found.

This handsome *Bulimus* is very similar in form to *B. Sylheticus*, Reeve, but this latter shell is smaller, exhibits no trace of spiral striation, has its surface more polished, while the columellar margin and outer lip is pure white; and in dozens I have collected no trace of a band is ever seen. In colour too *B. Sylheticus* differs from the new form in being lemon-yellow with a greenish tinge on the body whorl. Reeve, I notice, erroneously describes it in the Conchol. Icon. Bul. 564 as bright yellow, and makes a great blunder about its habitat, which is given as "Sylhet, Eastern Himalayah," Sylhet being a district south of the Khasi Hills in the plains of Lower Bengal. The true home of *B. Sylheticus* is the southern slopes of the Khasi and Garo Hills; the title is therefore unfortunately misleading.

I have named this species after Mr. J. Wood-Mason, to whom I am indebted for much valuable aid both in securing collectors and preparing equipments for the field.

Bulimus gracilis, Hutton.

Bulimus Nilagiricus, Pfr. var. The form is more elongate than those I have from the Khasi Hills. It is always very local in its distribution. Found under Torúpútú Peak at 3000 feet.

Alt. 0·66°.

One of the forms so curiously like those of Southern India that crop up in this province now and then, *Cyclophorus nivicola* being another so like is it to *C. Bairdii*.

Bulimus (Harpalus) Khasiacus, G.-Austen. Dikrang valley at 2500 ft.

Streptaxis Theobaldi, Bs. Low down in the Dikrang valley. Similar to the Khasi type. I figure the aperture of this shell (pl. viii, fig. 15) to shew the difference between it and the following.

STREPTAXIS DAFLAENSIS, n. sp., Plate VIII, Fig. 14.

Shell obliquely perforate, flatly ovate, minutely striated, white; spire much depressed, suture well marked, apex flattened, in one specimen quite flat. Whorls $6\frac{1}{2}$, regular to the 4th, the 5th rapidly descending, the last compressed below near the umbilicus so as to form a fold running up to a second and shorter fold on the outer margin. Aperture oblique, subquadrate, peristome slightly reflected. Parietal lamella one, strongly developed and connected with the parietal callus. The palatal teeth are disposed, 2 on the upper and 2 on the lowers margin, with a single intermediate one, which extends further within the aperture than those above and below it.

Major diam. 0·32", minor diam. 0·21", alt. 0·15".

HAB.—Near Tanir Peak, Dafla Hills, 4000 ft.

It is a much larger, more lengthened, and flatter shell than *S. Theobaldi*, and has a greater number of whorls. In the form of the aperture it is similar to that shell, but the parietal lamella is more developed and the central palatal tooth is not so remote from the peristome but rises close on the margin. The umbilicus also is more open.

Ennea stenopylis, Shengorh Peak, not a common shell.

ENNEA MILIUM, n. sp., Plate VIII, Fig. 11.

Shell cylindrical, dull glassy, diaphanous. Spire with flattish sides, very slightly tapering below, suture shallow. Whorls 6, the last 3 smooth, the apical sub-vertically ribbed, but slightly so. Aperture oval, vertical, last whorl ascending slightly to it. Peristome thickened, a little reflected, a single tooth-like thickening on the outer margin, with another single one on the parietal side.

Alt. 0·10", major diam. 0·04".

HAB.—Shengorh Peak, 7000 ft. A single specimen only was found on tearing off the thick growth of moss covering rocks.

This very distinct but minute *Ennea* bears somewhat the character of *E. Blanfordiana*, but in its minute size and differently formed aperture it is separable. It is the smallest species of the genus from this part of India.

Clausilia iös, Benson, Plate VIII, Fig. 13.

Compared with Darjeeling specimens in the Imperial Museum, Calcutta. Extending the range considerably to the eastward.

CARYCHIUM KHASIACUM, n. sp., Plate VIII, A, Fig. 8.

This form, which has not been noted before, occurs very abundantly in the Khasi Hills, particularly in the large wood near the village of Nongba on the Jaintia side. I obtained specimens of it on Shengorh Peak which are rather larger than those from the above quarter. It is quite distinct from *C. Indicum*, Bs. and may be thus known from it:—

Beautifully minutely and regularly costulate throughout under lens. Whorls 6, more rounded, apex more acute; the aperture circular and larger, peristome continuous forming a callus on the antepenultimate whorl, and the columellar tooth stronger. Alt. 0·09".

I also give a drawing of *C. Indicum* (pl. viii. A, figs. 7a, b), which I do not think has been before figured; the shell fig. 7 is like *C. Boysianum*, but the three shells here depicted were all found at Mussoorie, and *C. Boysianum* was originally obtained on the banks of the river Jumna near Agra.

EXPLANATION OF PLATE VIII.

- Fig. 1. *Helicarion minutus*, n. sp.
 " 2. ———— (*Hoplites*) *cinereus*, n. sp.
 " 3. *Philomyces* (*Incillaria*) *campestris*, n. sp.
 " 4. *Helicarion* (*Hoplites*) *radha*, n. sp.
 " 5. ———— ———— *verrucosus*, n. sp.
 " 6. ———— ———— *Burtii*, n. sp.
 " 7. *Testacella* ? *Dikrangensis*, n. sp.
 " 8. *Helix* (*Nanina*) *bilineata*, n. sp., nat. size.
 " 9. *Helix lubrica* ? Benson.
 " 10. *Glessula Daflaensis*, n. sp.
 " 11. *Ennea milium*, n. sp.
 " 12. *Opeas Nevilli*, n. sp.
 " 13. *Clausilia iös*, Benson.
 " 14. *Streptaxis Daflaensis*, n. sp.
 " 15. ———— *Theobaldi*, Bs. the aperture, enlarged.



KHASI AND DAFILA HILL SHELLS.



HELICACEA DAPLA HILLS ASSAM.